THE ECONOMIC BENEFITS GENERATED FOR THE EAST BAY COMMUNITY BY ITS REGIONAL PARK SYSTEM

A Report to the

East Bay Regional Park District

By

Steven E. Spickard

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SUMMARY

This study develops a comprehensive framework for determining the magnitude of the economic benefits generated by the operation of the East Bay Regional Park District (EBRPD) which accrue to the "East Bay community" defined by the park district boundaries. Eight currently accepted methods for calculating benefits are summarized and assessed. Of six methods applicable to EBRPD, three are alternate ways to measure the primary, or "user-oriented," benefit, and three measure various secondary, or "local impact," benefits.

Sophisticated techniques (which require the collection of new data) are described, and suggestions are given for their future use in an in-depth study. The most promising of these techniques will estimate the park system's impact on residential property values. This secondary benefit remains unaccounted for in the estimates below.

Less sophisticated techniques (accepted administrative rules of thumb) are used to produce immediate results. Established standards for the value of a visitor-day of recreation are used to estimate a range of $18 million to $36 million generated per year in primary benefits. Various assumptions about the multiplied impacts of EBRPD operating expenditures determine a range of $5.6 million to $29.2 million per year in secondary impacts. These mutually exclusive benefits are summed to arrive at a total range of EBRPD-generated economic benefits for the East Bay community of $23.6 million to $65.2 million per year, with a best estimate of $38.2 million. The significant conclusion is that even under the most conservative assumptions, the $23.6 million in calculated benefits exceeds the $16.3 million collected last year in property taxes, subventions, user charges, and fees.

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I. INTRODUCTION

The objectives of this study have changed some, and their priorities have been reordered, since the study was first proposed by Richard Trudeau, the General Manager of the East Bay Regional Park District (EBRPD) in December of 1977. As originally conceived, this study would develop the conceptual framework and review the relevant literature for a larger empirical study of the economic benefits of EBRPD to the East Bay community to be initiated later. The total effort outlined in the December proposal would provide a model for valuing a park's contribution to its surrounding economy; thus, helping "the park and recreation field to hold its own in the changing climate of tax funds." The growing storm over tax finance in California proved to be even more violent than expected, however. The threat of severe cutbacks in park and recreation revenues imposed by the Jarvis-Gann Initiative stimulated an attempt in this "ground laying" study to leap beyond the conceptual methods, assigning ranges of values to several of EBRPD's economic benefits.

The East Bay Regional Park District <u>is</u> a significant contributor to the quality of the East Bay environment. EBRPD owns or administers over 47,840 acres within a 983 square mile district composed of Alameda and Contra Costa counties (excluding only the Liberty Union High School District and Murray Township along the eastern edge of the region). Operating under the State Public Resources Code Sections 5500-5599, EBRPD provides its 1.6 million residents with open space, regional parks, preserves, shorelines, trails, and wilderness areas. Virtually every type of warm-climate, outdoor recreation activity may be pursued somewhere within the district.

A minor portion of park district revenues is composed of state and federal grants, leases on park buildings and concessions, user fees, and other miscellaneous charges and gifts. The bulk of EBRPD's funding, however,

is derived from property taxes. A 10-cent general fund levy provided almost $7 million for the 1977-78 fiscal year. In addition, the district is in the middle of a 10-year land acquisition program--begun in 1971. To finance this ambitious program, a 10-cent "supplemental land fund" tax is levied, of which 80% must go for acquisition and 20% for development, operation, and maintenance of new park lands. The total budgeted expenditures and reserves contributions amounted to over $26 million for 1977-78.

That this sizable venture benefits the local economy is unquestioned. The problem addressed here is to determine how large this benefit is. The overall approach to assessing economic benefit employs neither a formal "cost-benefit analysis," nor an "economic impact statement." These stylized techniques are more appropriate for decisions involving choices among the alternate land-uses of proposed developments. Rather, this study follows the economic benefit calculation procedures found in the outdoor recreation literature.[1] No proposed development is being evaluated here; most of the EBRPD parks have been in place for years. Still, a land use creates a "benefit" only in relation to some other use; hence, the difference between "having a park" and "not having a park" makes sense only if one can assess what benefits are generated by "not having a park." To fill this vacuum, most benefits discussed here are generated from operation and use of the parks. The alternatives evaluated then become: (a) the full public use of the parks as currently observed, vs. (b) a situation where the parks are closed to the public, and the land remains idle--a realistic alternative for the short run, given current fears of funding cutbacks.

[1]The procedures borrowed for use here also ignore most considerations of cost. It is generally recognized that even when provided without a fee, outdoor recreation is not free. In addition to direct support via property tax payments, there are costs associated with the removal of land for parks from the tax rolls.

The still-vague concept of economic benefit is more concrete when one realizes that all benefits ultimately accrue to individual people. Furthermore, beneficiaries may be separated into groups for study (e.g., park users vs. non-users, or residents of the district vs. those residing outside the district). This study adopts the perspective that the 1.6 million residents of the park district are the target group for park-related benefits. These taxpaying residents form EBRPD's constituency--the park system's elected board of directors is obligated to provide regional park benefits to the residents within its jurisdiction. Consequently, this study evaluates economic benefits which accrue to the "East Bay community" defined by the district boundaries.

Within this body of constituents there is also a distribution of economic benefits which is subject to change. For example, expenditures by park visitors may increase retail sales near parks, simultaneously reducing sales in the visitors' home communities; thus, redistribution of economic benefits among geographic areas occurs. Other mechanisms cause the redistribution of benefits among income groups and age groups. The issue of redistribution of economic benefit within the constituent group would require another full study for adequate treatment, and will be ignored for the purposes of this effort. The perspective taken here dictates that a "benefit" that accrues to one individual at the expense of another, both residing within the district, is not a true benefit.

To summarize, this study develops the framework for evaluating the economic benefits received by park district residents through operation of their EBRPD system. Techniques are discussed and employed to produce immediate assessments of benefits, and procedures for using more sophisticated techniques in the future are outlined.

The framework for the study is laid out in the next chapter. Economic benefits are split into two groups: (1) primary, "user-oriented," benefits, and (2) secondary, "local impact," benefits. The types of benefits will be considered mutually exclusive, although any individual resident may well enjoy the value of both.

Chapter III will cover the sophisticated empirical techniques which have been used in the literature to produce site-specific assessments of outdoor recreation benefits. The issues and problems which will arise when using the most applicable of these techniques in the future in-depth study will be discussed in Chapter IV. Chapter V discusses and uses two well-established administrative tools to arrive at immediate, non-site-specific, estimates of East Bay Regional Park District benefits.

II. FRAMEWORK FOR ASSESSING ECONOMIC BENEFIT

This chapter reviews the methods for valuing park services found in the public economics literature, and discusses the applicability of each method to EBRPD. The presentation is intended to provide a clear framework without using technical language. Consequently, only the most important concepts remain here, and many esoteric qualifications are only discussed later when the techniques are actually applied. For analysis, benefits are separated into two categories: (A) "primary benefits" which accrue to individuals visiting the parks, and (B) "secondary benefits" (generated through impacts on the local economy) which accrue to individuals residing in the district. Any individual may enjoy both types of benefits if he both uses the parks, and resides in the district. A way of adding all benefits without "double counting" (counting some benefits twice) is given in part C of this chapter.

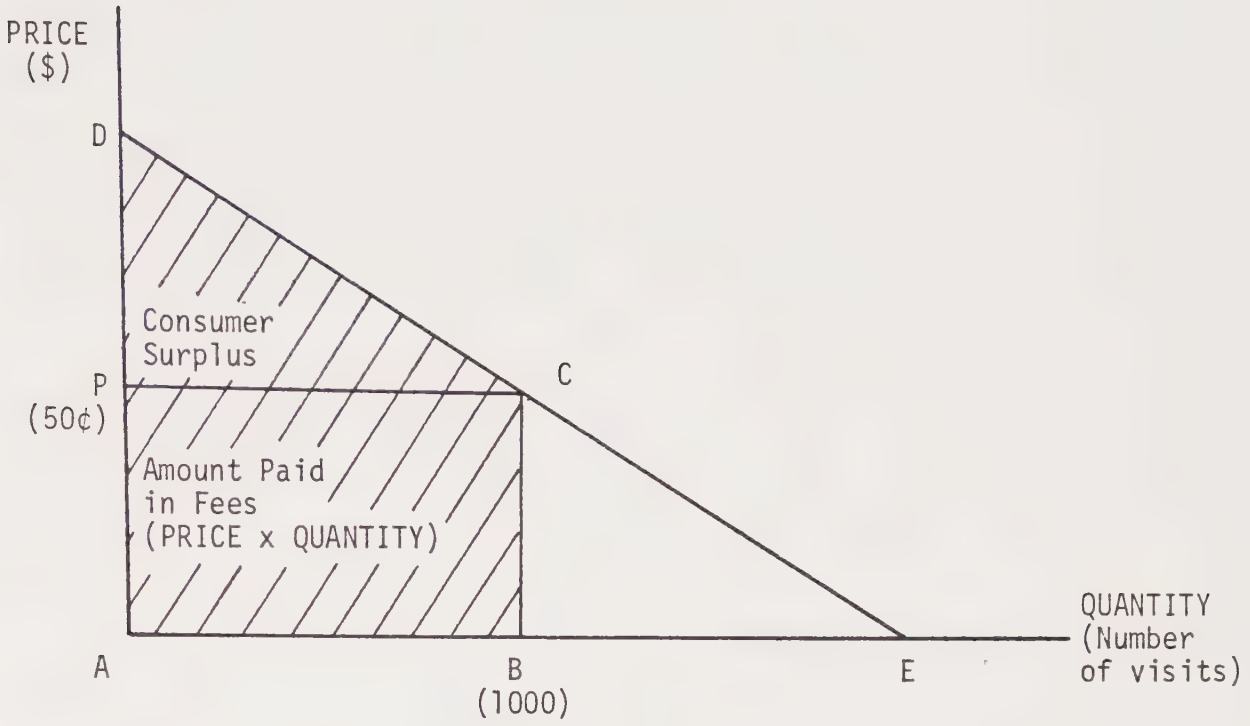
A. PRIMARY, "USER-ORIENTED," BENEFITS

Most individuals value the outdoor recreation experience sufficiently to be willing to pay a price to get it. Their demand for recreation amenities may be illustrated by the standard economic graph in Figure 1. The downward sloping line (DE) represents the demand curve for "visits" to East Bay parks. The curve shows that the lower the cost of park attendance, the more park visits will be observed (e.g., with lower entrance fees, more visitors will show up on any given day, and the more often any given individual will return to the park).

As with any other commodity, the value of a visit to a park is equal to what one is willing to pay for it. The total value of a hypothetical EBRPD facility to park users is illustrated in Figure 1 by the shaded area under the demand curve (denoted by ABCD). Some of this total value is

FIGURE 1

Demand for Outdoor Recreation
By Park Users



captured by the park administration by charging an entrance fee. For example, if 1000 visitors each paid a 50¢ fee, the administration would collect $500 represented by the rectangular area (ABCP) in Figure 1. In addition, each individual values the park visit more than the cost in fees (otherwise he would not come to the park). These surplus values create the "consumer surplus" illustrated by the shaded triangle in Figure 1 (PCD). Each of the techniques below represents an attempt to quantify this total shaded value under the demand curve (the out-of-pocket expense plus the free "consumer surplus").

(1) Direct Interviews to Determine Willingness to Pay. The most widely accepted approach to valuation in the cost-benefit literature is often referred to simply as "willingness to pay." Market survey techniques are employed to

ask park district residents what they would be willing to pay for different levels of EBRPD park usage. An "aggregate" demand curve--showing the total demand by all users--can then be constructed, and the total user-oriented benefit estimated (given total park attendance figures). While this procedure will produce a dollar value, two problems arise. First, quality surveys are expensive. Second, answers to survey questions may not reflect actual behavior. Respondents tend to report lower willingness to pay if they are afraid user charges are being considered, or will overestimate their willingness if they fear park services are to be curtailed. The second problem may be alleviated somewhat by creating gaming simulation situations. Unfortunately, this solution only exacerbates the original cost problem.

(2) Travel-Cost Demand Analysis. Many valuation studies consider all out-of-pocket expenses, including travel costs to and from a park, to be the price (and hence, the value) of the park experience to the individual visitor. To employ this method the population around the park is stratified by distance from the recreation area, and the number of visits generated in each distance zone is counted. Using the travel costs from each zone as the various prices of admission, a demand curve (like the one in Figure 1) can be constructed. It has been universally observed that the greater the price (distance), the fewer the number of visitors. Given the demand schedule for a specific park, the total benefit may then be derived by measuring the area under the curve (corresponding to the shaded area in Figure 1).[2] This technique has been used most successfully in valuing remote National Parks where there were significant differences in travel costs. The travel-cost approach

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[2]While this method does account for the consumer surplus, it underestimates price (and therefore, value) by ignoring the opportunity cost to the visitor of the time spent in transit.

may not be useful for valuing the benefit from EBRPD if the distances traveled prove to be relatively short.

(3) Comparable Prices for Private Parks. Often an outdoor recreation experience comparable to that found in a publicly provided park may be purchased at a private facility. The value of the public park may be estimated by multiplying its annual number of visitors by the price found in the private market. Unfortunately, there are no significant comparable private parks in the East Bay to use as comparisons. Thus, this method could be applied to EBRPD only after assuming the demand for parks is similar in a distant region containing private facilities. Furthermore, there is probably no significant private market anywhere for the type of picknicking and day use facilities offered by EBRPD. Where markets for general park services do exist, private parks are usually forced to keep their fees low, because they must compete with free public parks. The value of both public and private park benefits is thus underestimated when using private fees. Park benefits will also be undervalued, because the consumer surplus (the shaded triangle in Figure 1) is ignored when using a fixed private price.

(4) Established Standards for the Value of a Visitor-Day. Another valuation technique assumes that the rational park user values the recreation experience at least as much as the money he spends to procure that experience. Using average recreation related expenditures per person, and average hours spent for recreational purposes, some researchers have been able to estimate an hourly cost of recreation. Assuming this price is also a reasonable estimate of value, the total benefit from any specific park may be obtained by multiplying this price by observed user-hours. In fact, several federal agencies use standardized values for a visitor-day to estimate the total

benefit from their projects. The main objection to this technique is that the consumer surplus is again ignored. The main virtue of this technique is that it provides low-cost estimates.

(5) Less Appropriate Techniques. There are various other methods in the cost-benefit literature for valuing public goods which, while conceptually appealing, have little application to EBRPD. For example, economists have suggested administrators experiment with various user fees to "feel for" the public's willingness to pay for services which have no traditional markets. While the EBRPD administrators might soon require higher entrance fees to help cover expenses, they would no doubt find experimenting on their constituents to be politically unpalatable. Other economists have suggested that the value of the recreation experience is equal to the opportunity costs of the park user's time spent in recreation. Again, this is conceptually appealing, but difficult to estimate.

There were also techniques which were developed in the outdoor recreation literature which have since been discredited. Under the "gross expenditure method" recreation benefits were assumed to equal all the out-of-pocket expenses incurred by a park visitor. Unlike the similar "travel-cost demand analysis" approach above, no demand curve was estimated; hence, gross expenditures did not reflect the total net value. The "cost method" assumed recreation benefits to equal the costs of providing recreation; or in some cases, equal to a multiple of costs. Such a simple definition of benefit provided no help in decisionmaking. Another approach assumed that the market value of fish caught equaled the value of sport fishing. That was dumb.

Still other common cost-benefit techniques have no useful application to outdoor recreation. Recreation may not realistically be valued as an "intermediate good" without being able to value such final outputs as

better physical health, and higher quality of life. The "replacement cost" approach--that of finding substitutes in the private market--is basically the same as the "comparable prices for private parks" approach above. Finally, "option demand"--the willingness of individuals to pay to maintain the opportunity to visit a park in the future even though they do not now participate in outdoor recreation activities--no doubt exists, but there is no market in which to measure the value individuals place on keeping recreation options open.

B. SECONDARY, "LOCAL IMPACT," BENEFITS

EBRPD may also have economic impacts on district residents who never personally use the parks; or alternately, these impacts may be felt as an additional benefit that park users enjoy by virtue of their residence in the park district. The impacts here are divided into five conceptual groups (whose effects are basically mutually exclusive): (1) impacts on property values; (2) multiplied economic impacts of EBRPD operating expenditures; (3) multiplied impacts of visitor expenditures; (4) attraction of new industries; and (5) other benefits generated by EBRPD's presence in the East Bay.

(1) Impacts on Property Values. In a rational real estate market, property values are higher in "nicer" neighborhoods. Close proximity to EBRPD park lands may be one of the factors creating a "nice" environment. The value of amenities gained by close proximity (e.g., views, fresher air, and access to recreation and open space) will be reflected in the price of location. The economist would say the benefit derived from these amenities is "capitalized" into property values.

In general, the increment in residential property value attributed to park-related amenities will decrease as the distance from the park

increases. This relationship between property value and distance may be termed a "location rent curve" reflecting the premium people are willing to pay to locate near a park. There is a counter effect, however, which reflects the "negative externalities" associated with park activities (e.g., noise, congestion, and increased risk of vandalism). A model of these two impacts of parks on surrounding property values is depicted in Figure 2(a). The two trends may be combined (by adding effects together) to produce a hypothetical "net effects" location rent curve in Figure 2(b). Most studies have found location effects to be negligible beyond 1000 to 3000 feet from the park. These studies, however, have generally been confined to smaller, urban parks.

Econometric techniques are available which can estimate the shape of the "net effects" curve. A park's total economic impact on surrounding properties may then be easily calculated using the relationship between distance and increment in value. In its simplest form, a least squares regression can be run on observed property sales prices against a measure of distance, and a set of "control variables" which capture other determinants of property value. (The control variables establish the baseline "value of property without the park" on the horizontal axis of Figure 2.) While excellent econometric techniques abound, the types of detailed data necessary (e.g., accurate measures of value, housing quality, and neighborhood characteristics) are often difficult to compile. Collecting this data for all the property surrounding EBRPD lands is beyond the scope of this study, but a proposal for doing such a property value impact study is given in Chapter IV.

(2) Multiplied Impacts of Operating Expenditures. With their tax payments, district residents do procure other economic benefits besides direct user benefits, or direct increases in property values. For example, the

FIGURE 2

The Composition of a Hypothetical "Net Effects" Location Rent Curve for Parks*

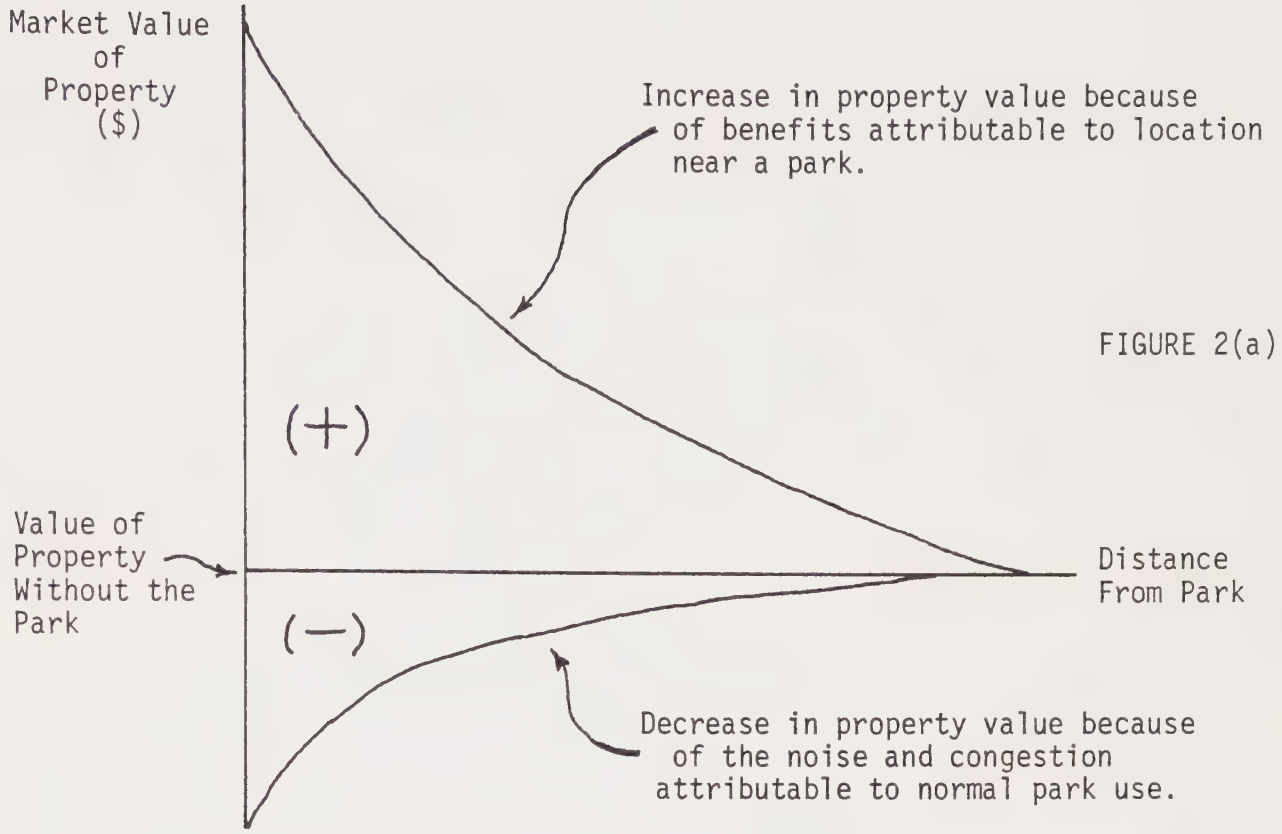

FIGURE 2(a)

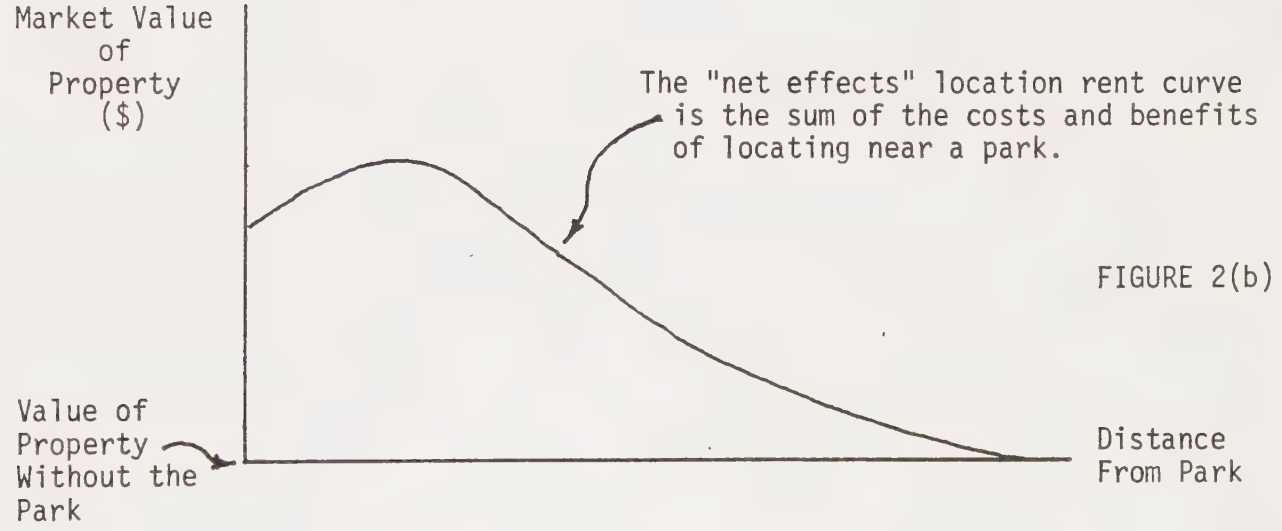

FIGURE 2(b)

*This illustration comes from Lyon(1972), p. 122.

district employs around 300 people on a permanent basis, and another 200 seasonally. Paychecks are spent for the most part within the community of employee residence. To the extent that these people would not otherwise have been employed, there is a multiplied economic impact as money circulates through the community. Employee salaries and benefits alone amounted to over $7 million last year. In addition, park revenues go to purchase equipment and raw materials with which to make land improvements. These expenditures again have a multiplied effect on the district's economy, if they employ underutilized resources. An estimate of the economic multiplier, along with an estimate of the proportion of the EBRPD budget going to underemployed local resources, will provide an estimate of the dollar volume of these impacts.

(3) Impact of Visitor Expenditures. An argument has often been advanced that expenditures made by park visitors provide an "export base" to the community adjacent to the recreation facility. Money is brought into the community from afar and is spent on gas, food, and lodging. As the money received, by say a hotel owner, is spent, and respent, within the community, the original "export" of lodging services to the visitor is seen to have a "multiplied" beneficial economic impact on the whole community.

This important mechanism has received much attention in the literature, but it does not apply to EBRPD for two reasons. First, because EBRPD facilities are, for the most part, designated for day use only, the services exported to visitors are mostly food, gas, and perhaps camera film. The "value added" by the community to gas and groceries is very small. 75 to 85 percent of the money received by the proprieter for gas and groceries must go right back out of the community to pay for wholesale supplies; with only 15 to 25 percent[3]

[3] Clawson and Knetsch(1966)

left over to be recycled through the community as profits, wages, and taxes. In contrast, around 75 percent of money spent for lodging stays in communities near distant National Parks.

Second, and even more important, due to the perspective taken in this study the "community" in question here must be the entire two-county park district. Visitors to Crown Beach from Orinda may stimulate Alameda's local economy at the expense of a favorite grocery store in Orinda, but from the perspective of the park district there has been no economic impact; only a redistribution of expenditures. Because the vast majority of regional park visits are generated within the district,[4] the community export base mechanism does not apply to EBRPD.

(4) Attraction of New Industries. There is an argument in the literature that the presence of quality recreation opportunities will make an area more attractive to new industries. Thus, the East Bay community may enjoy a stronger economy with less unemployment than it would without its regional park system. Surveys of business and industrial leaders may be conducted to assess the importance of EBRPD in locational decision-making.

(5) Other Benefits. The park district also provides its constituency with many less-tangible benefits. There is the spiritual value of easy access to natural environments, and open uncrowded spaces. There is the increase in quality of life from the fresher air provided by park foliage. Child development is enhanced by park play. The list goes on and on, but the point is the East Bay is a more desirable place to live by virtue of EBRPD's presence.

The East Bay Regional Park District also provides "free" benefits to

[4]Parks draw around 89% of all visitors from within a 25-mile radius, Tyler Research Associates(1976), p. 75.

individuals outside its constituency. There are "spillover benefits" to the rest of the Bay Area, and there are general benefits of conservation for future generations. The presence of such "intangibles" and "externalities" has traditionally been used to justify the public provision of parks (see Appendix A).

C. SUMMARY OF METHODS FOR ASSESSING ECONOMIC BENEFITS

The eight methods distilled from the theoretical literature for valuing the benefits of outdoor recreation are arrayed in Figure 3. The four methods listed vertically under "Primary Benefits" are alternate ways of measuring the same, user-oriented, economic value. The four methods appearing horizontally under "Secondary Benefits" (each one in its own column) measure separate, mutually exclusive, local impacts. The only potential overlap ("double counting") among benefits occurs between the "Primary Benefits" column and the property value impacts column. The Tyler Research Associates(1976) study found, however, that only 2% of all park visits were by people living within the one-mile zone of expected property value impacts around each park. Consequently, all five columns of Figure 3 represent separate benefits; and thus, total measureable economic benefit is the sum of five estimates, one from each column.

For the specific case of EBRPD, however, two of the eight methods have been found not to apply. "Comparable prices for private parks" do not exist, and the "multiplied impacts of visitor expenditures" are insignificant. Four of the remaining six techniques require collection of new data, specific to the site being studied. Such massive "data crunching" empirical investigations are beyond the resources of this current study. This type of investigation has been undertaken elsewhere, however, and Chapter III reviews the empirical work to date which has some application to EBRPD. A strategy will

FIGURE 3

Methods for Assessing
The Economic Benefits of Outdoor Recreation Areas

TYPES OF METHODS	PRIMARY BENEFITS	SECONDARY BENEFITS			
	Benefits to Users of Parks (Estimates of "Willingness to Pay")	Benefits to Non-Users of Parks (Estimates of Local Impacts)			
Non-Site-Specific ("Rules of Thumb")	* Comparable Prices for Private Parks * Established Standards for Value of a Visitor-Day		* Multiplied Impacts of Operating Expenditures	* Multiplied Impacts of Visitor Expenditures	
Site-Specific (Requires New Data Collection)	* Travel-Cost Demand Analysis * Direct Interview to Determine Willingness to Pay	* Impacts on Property Values			* Survey of Criteria for Industrial Location

then be proposed in Chapter IV--taylored to account for EBRPD's unique characteristics--through which it would be possible to add to, or replace, the estimates of economic benefits determined in Chapter V. Chapter V estimates use the remaining two non-site-specific, "rules of thumb," methods left in the top half of Figure 3.

III. SITE-SPECIFIC STUDIES

This chapter reviews the empirical literature. A site-specific study of the type described here may be done for EBRPD in the future. Some problems and advantages of doing such a custom taylored study are outlined in Chapter IV. The more general part of the outdoor recreation evaluation literature is discussed in Chapter V.

A. EMPIRICAL ESTIMATES OF PRIMARY, USER-ORIENTED, BENEFITS

The Travel-Cost Demand Analysis Approach. This method of valuing benefits to park users has probably received more attention than any other. Often referred to in the literature as some variant of the "Hotelling-Clawson-Knetsch" approach, after its pioneers, the travel-cost approach has been used to estimate price-demand relationships by many authors.[5] While there are as many variations in methodologies as there are empirical studies, a method of medium-level sophistication would be best for future study of EBRPD. Even so, there are two serious problems with relying on this technique as the estimate of park user benefits.

Harold Hotelling is given credit for originating this technique in his response to a 1947 National Park Service questionaire. He observed that the benefit visitors enjoyed from a park experience was the same regardless of how far they traveled to find that experience. Those living near the park enjoyed lower costs of travel; hence, they enjoyed a consumer surplus. This surplus Hotelling considered to be the relevant measure of economic benefit.

Clawson(1959), and Clawson and Knetsch(1966) expanded upon this idea, demonstrating that a demand curve could be derived from the travel-cost and

[5]Burt and Brewer(1971), Cicchetti, Fisher, and Smith(1973), Clawson (1959), Clawson and Knetsch(1966), Gibbs(1974), Knetsch and Davis(1966), Mansfield(1972), Merewitz(1968), Wennergren(1964,1967).

visitation rate data, and the consumer surplus could then be estimated directly. Wennergren(1964) framed this approach in terms of the standard economic utility theory of the early 1960's, theorizing that travel costs and on-site expenditures equaled the marginal cost (and therefore, the price) of the recreation experience. In an empirical study of three boating sites in Utah, Wennergren(1967) was able to show that demand was in fact significantly affected only by these variable costs of recreation, giving empirical support to the Hotelling-Clawson technique.

A series of benefit estimations of increasing complexity have been published since the theoretical groundwork was laid. Knetsch and Davis(1966) found a similar version of the technique compared favorably with direct interviews of willingness of users to pay for visits to the Pittston area in the Maine woods. Merewitz(1968) used the model to estimate the consumer surplus generated by five lakes spread throughout Southern California; and for example, was able to conclude that "Lake Cachuma day use was worth, on the average, $1.49 more than people paid." Burt and Brewer(1971) expanded the model in two significant directions: (1) they formulated a continuous model, specified using Calculus rather than the discrete concentric zones used by previous authors, and (2) they took into account the distances to, and demand for, all the parks in the area.[6] Using 2,031 household demand schedules obtained by direct interview, Burt and Brewer were able to conclude that 80 percent of the economic benefit of three proposed Army Corps lakes in Missouri was due to recreation, and only 20 percent to flood control. Mansfield(1972) produced a similar model to simultaneously estimate the benefits of a series of parks in the United Kingdom.

There are two problems with the above empirical methodologies which

[6]The simpler models of Hotelling, Clawson, and Merewitz analyzed the demand for each park separately.

temper their applicability to the EBRPD. First, given the large number, yet close proximity, of district parks, one of the more sophisticated models for simulating multiple user-demand decisions should theoretically be used. These models require more knowledge, more data, and more computer time than simpler techniques; hence, they are relatively expensive. Second, all the studies in the literature analyze the decisions of park visitors who travel longer distances than do EBRPD visitors. Clawson typically uses National Parks as examples, where people travel for days to get there. Mansfield's study examined distances of 30 to 250 miles. Merewitz feels the travel-cost approach is best used where travel time is less than half a day, yet his study covered five counties. Cicchetti, Fisher, and Smith(1973) conclude their study saying, "This approach is best suited for remote, resource-based sites, not for population-based sites." Travel-cost techniques are no less valid on a regional scale, but due to the very accessibility of EBRPD parks, the techniques may undervalue the primary benefits of EBRPD.

Chapter IV proposes that data be collected for a simple estimate based on travel costs in the EBRPD system, but that the main reliance for estimates of user benefits be on direct interviews of willingness to pay. Travel-cost demand analysis would then provide a check on the primary technique employed at little additional cost.

Direct Interview to Determine Willingness to Pay. Given the well-established conceptual validity of this method for determining primary economic benefits, it is surprising that more studies have not employed survey research techniques to measure the willingness of park users to pay for outdoor recreation. Perhaps this is because a new survey must almost always be given. In contrast, the data needs for the travel-cost approach may sometimes be met by drawing information from attendance records.

Willingness to pay surveys need not always be long or complicated, however. For example, McConnel(1977) ran a survey during ten summer days on six Rhode Island beaches, interviewing 229 individuals for socio-economic data and their willingness to pay for beach use under differing levels of congestion. For ease in interviewing and analysis, responses were recorded in fifty-cent intervals. A similar, relatively simple, survey instrument would furnish all the data necessary for a primary benefit estimate for EBRPD. The scope of the survey would have to be broader, however, and a suitably random sample of park users participating in many different activities at several park sites would have to be questioned. In this respect, the proposed study--discussed in greater detail in Chapter IV--would look more like the Tyler Research Associates "Need and Demand Survey" done for EBRPD in 1976.

The best model for a willingness to pay survey is the one done by Knetsch and Davis(1966) in the Maine woods. Interviews were given on the site, placing respondents in a bidding game where hypothetical user fees were raised or lowered until the park visitor switched his hypothetical decision to visit the park or not. More personal questions were asked afterward regarding income, education, and the like. (The cumulated distribution of all respondents' willingness to pay estimates constitutes an aggregate demand function.) Of the 185 people interviewed, willingness to pay per day ranged from zero to $16.66 with the most common value in the $1.00 to $2.00 range.[7] In order to get a simulated demand curve for the entire population (like the one in Figure 1) econometric techniques were used to predict willingness to pay given socio-economic data. Total primary economic benefits were then measured by the area under the demand curve

[7]Remember, these are measured in pre-inflationary, 1963, dollars.

(again, represented by the shaded area in Figure 1). Knetsch and Davis were thus able to estimate a total economic benefit to users in excess of $71,000 per year.

A simpler, but still useful, approach was recently taken in a study for the Bureau of Outdoor Recreation by Economics Research Associates, ERA(1976). The thrust of this study was to measure willingness to pay in order to assess the feasibility of increasing user fees at public outdoor recreation areas to help cover increasing costs of operation. Consequently, rather than construct demand curves to measure the economic benefits defined by consumer surplus, the authors produced "tolerance zones" defined by the amount the public is willing to pay over the amount actually paid for recreation during the last visit. Employing a nationwide survey of 800 households, the ERA study found the average willingness to pay for EBRPD-type recreation activities[8] to be between $4.74 and $5.17 per day. A better measure of the "typical" park visitor's willingness to pay are median figures, found to range from $2.97 to $3.29 per day for the same activities. (If EBRPD's 12 million annual visitors can be assumed to behave similarly to the national sample, then a case can be made for valuing a typical visitor-day at around $3.00 producing a total annual economic benefit to users of $36 million.)

In Chapter IV, a suggestion will be given for a Knetsch and Davis-style survey and analysis to be done as the best measure of the primary, user-oriented, economic benefits of EBRPD; with data simultaneously being collected for a simple travel-cost analysis to be used as a check on the estimates derived from the direct interview procedure. Until such a major study is undertaken, the best estimates of primary benefits may be made using

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[8]The categories "Fishing, Boating, Outdoor Swimming, and Picknicking" from "Summary Table 2" are analyzed here, Economics Research Associates (1976) page 21.

standardized unit-values for a visitor-day. User benefits of EBRPD are measured in this manner in the first section of Chapter V.

B. EMPIRICAL ESTIMATES OF SECONDARY, LOCAL IMPACT, BENEFITS

Property Value Impacts. As discussed in the previous chapter, one of the largest beneficial external impacts of EBRPD may be the enhancement of residential amenities in locations near regional parks. This impact manifests itself economically as the capitalization of park-related amenities into increased property values. The problems addressed by the site-specific studies in the empirical literature[9] are: how to separate out that component of total value which is attributable to proximity to a park; how large the effect is; and over what distance the effect is felt.

Most studies employ a cross-sectional econometric approach typified by a pioneering study done by Kitchen and Hendon(1967). These authors analyzed a small urban park situated in a homogeneous, single-family, residential area of Lubbock, Texas. Observing resale values recorded by the county assessor for 480 properties, they were able to determine using very simple statistics[10] that land values did decline with distance from the park within a two and one-half block "zone of influence." The authors concluded that "differentials in land values of this type might be considered a significant secondary economic benefit."

Other analysts of local impacts, however, have taken the perspective that property value increments actually measure primary park-user benefits,

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[9]Econometric studies of property value impacts have been done only recently and include: Darling(1973), Dorenbusch(1974,1975), Hammer, Coughlin, and Horn(1974), Kitchen and Hendon(1967), Lyon(1972), Skaburskis (1976), and Weicker and Zerbst(1973).

[10]Distance from the park was correlated with land value to produce a correlation coefficient of -.17 at the .001 level of significance.

because park users will pay premium prices to move into housing with good access to their favorite park. Even though property values around EBRPD parks reflect much more than just user benefits, the conclusions of this type of study are still applicable to EBRPD, because the same methods are used to estimate increments in value regardless of why the increments occur. For example, unable to use the travel-cost approach in urban areas because the distances traveled are insignificant, Darling(1973) used property value impacts to estimate user benefits--although he realized his method failed to account for consumer surplus and benefits accruing to park visitors from farther away. Using ordinary least squares regression to control for housing and neighborhood characteristics around three urban lakes, including Lake Merritt in Oakland, he detected increases in property value within a 3000 foot radius of each shoreline. Using assumptions and methods similar to Darling's, Lyon(1972) found that benefits from parks and schools were capitalized into property values as far as one-quarter to one-half mile away from the sites.

Most studies agree that property values will reflect many external benefits of parks (views, moderation of local climate, higher concentrations of birds and wildlife) in addition to user access. A recent American Institute of Planners Research Report is one such study (Hammer, Coughlin, and Horn, 1974). Employing a fairly sophisticated regression model of the real estate market around the 1,294-acre Pennypack Park in Philadelphia, the authors found that effects stretched beyond 2,500 feet from the park. More specifically, the presence of the park accounted for 33 percent of land value at 40 feet, 9 percent at 1000 feet, and 4.2 percent around 2,500 feet. Counting the number of dwelling units in concentric zones around the park, and multiplying each subtotal by the estimated location rent per dwelling

unit of each zone, the authors arrived at a total annual economic benefit of $3,391,000 generated by the park for surrounding residents.

Diametrically opposed to Darling, Weicker and Zerbst(1973) assumed they were measuring the capitalized value of secondary, local impact, benefits--not primary, user-oriented, benefits--when they analyzed property values around five urban parks in Columbus, Ohio. In fact, they concluded that "Ultimately a cost-benefit analysis of any municipal park would need to estimate both benefits to users and externalities to non-users. To our knowledge, this has not yet been done." They also found empirical evidence for the casually observed phenomenon that some properties near parks will suffer decreases in their values due to noise, congestion, and threat of vandalism. These authors found houses fronting on heavily used parks--adjacent to baseball diamonds or playgrounds--sold for $1,150 less on the average than other homes in the area, while those fronting on quieter parks sold for an average of $1,130 more.

Two other groups of studies are relevant for this chapter. First, Dorenbusch(1974,1975) has developed a methodology for analyzing property value impacts using a "before/after" approach to augment the cross-sectional approach discussed above. While this technique is more applicable to situations where there is a distinct change in the level of development or use of a park--Dorenbusch has analyzed changes in water quality of urban lakes and streams--Dorenbusch suggests[11] a before/after model might be applied to EBRPD to pick up residents' changing evaluations of the benefits they derive from nearby parks. The water quality studies have found that impacts from large bodies of water vanish around 4000 feet from the source, and that impacts from small lakes and streams vanish around 2000 feet.

[11]This possibility was suggested during a telephone conversation with the author on 5/2/78.

The last study effort of interest here is the series of BART impact studies on property values currently being done for the Metropolitan Transportation Commission. Skaburskis(1976) employed the cross-sectional econometric techniques discussed above in a case study of the Rockridge neighborhood. David M. Dorenbusch, Inc. is now working on a larger BART impact study with at least nine case studies. If nothing else, these studies pinpoint some of the data sources in Alameda and Contra Costa counties which may be tapped for the in-depth EBRPD property value impact study suggested in Chapter IV.

From the review of this field in the empirical literature, several insights into the local impacts of EBRPD may be discerned. First, the regional parks certainly generate a net increase in the value of the properties surrounding them. Second, those positive location rents are most likely contained within a one mile radius of park boundaries, with the significant effects manifesting themselves within half a mile. Third, even though significant impacts occur only on properties relatively close to parks, the large number of adjacent private properties throughout the two-county district, and the high average value of those properties, creates a sizable economic benefit through this impact mechanism. Fourth, because EBRPD parks tend to draw such a large portion of their visitors from outside the half-mile radius, this mechanism cannot be construed as a measure or primary, user-oriented benefits. Furthermore, this study adopts the perspective of Weicker and Zerbst that property value impacts are essentially a measure of secondary economic benefits which may be added to estimates of user-oriented benefits, even though double counting arises to the extent that up to 2 percent of the users live within the half mile impact zone.[12] And

[12]Tyler Research Associates(1976) found that an average of 2 percent of visitors traveled "less than one mile" to arrive at one of the nine regional parks where Tyler conducted surveys, p. 75.

fifth, the studies in the literature analyze too diverse a sample of recreation activities and sites, and employ accounting and reporting methods which are too inconsistent, to allow previously determined empirical formulas to be applied to the regional park system in the East Bay. An accurate assessment of EBRPD's impact on property values requires a new site-specific study of the type recommended for EBRPD in Chapter IV to be done.

Impacts on Industrial Location. Traditional location theory holds that many factors affect industrial siting decisions, including the presence of such "quality of life" amenities as outdoor recreation opportunities. In one of the path-breaking ORRRC Study Reports, Moore(1962) notes that, "there is widespread belief that recreation is not only a desirable economic activity in its own right, but that it will attract industry." On the margin, an industry might be attracted to the East Bay, because the presence of a quality regional park system makes it easier to inturn induce labor to follow the industry's relocation. Or alternately, EBRPD's presence may have already attracted the residential population which creates a ready-made market for a new industry.

Unfortunately, there is little empirical evidence to support these long-held beliefs, and there are no studies which attempt to place an economic value on this impact mechanism. McDonald and Grefe(1976) speak in terms of perceptions of the Bay Area, or its "image," in attracting businesses, noting that the benefits derived are largely intangible. According to these authors, after-the-fact case studies of decisions may provide the best means of accounting for the significant "image" element in locational decisions.

The original proposal for this study mentions a 1950's survey of East Bay businesses done by the Oakland Chamber of Commerce. The only

study of locational decisions in this region unearthed in this literature search was the report to the BART Impact Program by McDonald and Grefe(1977), which found BART not to be a key factor in the decisions of the 85 Bay Area business and industry leaders to locate here.

The dearth of empirical work makes it necessary to initiate a new, after-the-fact survey of East Bay firms in order to determine the importance of EBRPD in locational decisions. Such a survey is beyond the scope of the current effort. Furthermore, results of such a survey might well substantiate the claim that the park district enhances the East Bay economy by attracting industries, but the procedure will produce no objective dollar estimate of the impact. The costs of doing a new survey of businesses, only to subjectively support a belief we already have good reason to hold, make such a survey a mere luxury in any future in-depth study. Consequently, no method for determining the economic benefit of park-attracted industries is given among the research suggestions in the next chapter.

IV. FUTURE RESEARCH EFFORTS FOR EBRPD

The East Bay Regional Park District administration is now faced with deciding whether or not to further pursue their economic research. On the one hand, any additional work will be substantially more expensive than this "ground laying" study; but on the other hand, there are significant economic benefits which remain unaccounted for in the current estimates. The most cost-effective research thrust would begin by investigating the beneficial impact EBRPD parks have on residential property values, followed perhaps by user surveys to quantify the consumer surplus enjoyed by visitors.

Research into property value impacts is most needed at this time, because no estimate of the sizable benefits thus produced is currently available. The empirical literature in this area is relatively new, with most studies published within the last ten years. Consequently, an EBRPD study of this type would be topical, would employ data and methods currently available (and being refined at the moment), yet would represent a new application. It appears that no study has yet investigated property value impacts attributable to a system of parks contained within the same local geographic area. The pathbreaking qualities of such a study may make it easier to attract competent investigators and outside funding. If only one research avenue is to be pursued, this is it.

A second section of this chapter will discuss ways to conduct and analyze "willingness to pay" surveys. Perhaps this stage of future research should be deferred, because the cost of doing a new user survey will be high,[13] yet the product will simply be a narrower range for total benefits than that estimated using unit-value standards with perhaps a slightly higher best estimate. If the EBRPD administration conducts a user survey for some

[13] At least equal to the cost of the Tyler Research Associates(1976) study.

other reason, then the information necessary for a willingness to pay analysis can be collected at a small marginal cost.

Finally, this chapter remains a discussion of issues and possible directions rather than a formal research design. Future investigators will have their own ideas on what constitutes the best methodology. Parts of this chapter will be more technically written than the other four chapters in an attempt to communicate with these future investigators.

A. RESIDENTIAL PROPERTY VALUE IMPACTS OF EBRPD

Ideally, one could measure the impact of a park by observing the values of local properties before and after the park is put in. If historical data is good enough for areas around the newer EBRPD parks, such a "before/after" approach might be possible. Most EBRPD parks have been in place for a long time, however, up to forty years for the most heavily used parks. Consequently, a before/after approach is not feasible for the park system in general. A cross-sectional approach is outlined here.

The most straight-forward model would look something like:

$$V_i = f(P_i, H_i, N_i, E_i, e_i)$$

where: V_i = the value of the i^{th} property,

P_i = several variables which describe the relationship of the property to the nearest park,

H_i = variables describing the size and quality of the property (both land and improvements),

N_i = variables characterizing the neighborhood environment,

E_i = variables characterizing the local economic environment, and

e_i = an error term.

Such a model can easily be estimated using ordinary least squares regression,[14]

[14] OLSQ is recommended because: (1) easy to use regression software is now available at most computer installations, and (2) the technique is widely accepted in the property value impact literature.

producing estimates of impact magnitudes and their statistical significances while controlling for "all" other determinants of property value.

Variables. According to traditional economic theory, the best measure for the value of a commodity is the price that commodity brings in an open market. After acknowledging the many imperfections of the real estate market, the best measure of a property's value readily available for use as the dependent variable in the model is still the price the property sold for most recently. If one may assume there is no systematic bias governing which houses sell at any given time, then all residential properties in park vicinities which have sold in the last several years (e.g., in the last five years) constitute the ideal random sample for this study.

The independent variables in the model may be divided into two groups: (1) those that measure the effects of park proximity that we are interested in, and (2) those that control for other determinants of property value. The vectors H, N, and E constitute the control set as specified.

Ideally, H would include descriptions of both the lot, and the house which sits upon it. Ideal measures might be selected from a list including (a) area of the lot, (b) lot slope, which also accounts for hillside locations, (c) square footage in the house, (d) the number of rooms, (e) the "quality class" of the structure, (f) proxies for architectural quality, (g) the presence of central heating, (h) the garage type, (i) the number of fireplaces, (j) the number of bathrooms, and (k) the number of builtins.

The quality of the neighborhood is captured in N using permutations of such measures as: (a) extent of traffic on the street, (b) type of street (through street, boulevard, or cul-de-sac), (c) prevalence of special nuisances, (d) racial composition of the neighborhood, and (e) the zoning applying to the lot. All of the "ideal" variables listed thus far, except

the racial measure, are collected and maintained in machine-readable form, at least for Alameda County, by the Assessor's Office.

E would contain at least one variable to capture the real estate market trend over the time period from which the data is drawn. The best proxy available may be the housing component of the Consumer Price Index for the S.F.-Oakland SMSA from the month in which the property was sold. Inclusion of such a time-varying index should capture that increment of market value attributable to the tremendous housing inflation suffered by the Bay Area over the last five years.

The control set should explain most of the variation in property value. The set of variables of interest, P, should then pick up that component of value attributable to the property's relationship to the nearest EBRPD facility. The most critical variable would be distance in hundreds of feet from the property to the nearest park access point. Again, from the theory in Chapter II, one would expect to find a decreasing positive impact of parks on property values as distance increases, disappearing completely after a few thousand feet. Other variables describing a property's relationship to a park, such as the presence of views overlooking the park, could be added to increase the explanatory power of the model.

Data. As previously stated, most of the data above is present, in presumably good shape, on the Alameda County Assessor's computerized files. This data base was tapped and utilized by Skaburskis(1976) to estimate BART impacts in a case study of the Rockridge area. In order to keep his records confidential, however, the assessor allowed Skaburskis only limited access to the raw data, and it appears that he will allow no further research at all. In addition, a similar appraisal tool does not seem to exist for Contra Costa County.

The information necessary to construct a slightly less-than-ideal data base does exist in the public records, but data from different sources must be put together by hand. The historical files kept at the appraisal desk provide the date a property was last sold along with a measure of lotsize, the deed number, and the owner's name and address. This information can then be used to index additional files in the County Recorder's Office, including the value of the Transfer Tax Stamp which can be used to compute the sales price. The multiple listings maintained by real estate brokers may provide additional information. At least one other local investigator is currently piecing together such a property value data base with success.[15]

Sampling Strategies. The ideal sample discussed above would include all properties sold within a specified time (e.g., the last five years) which are located within a specified distance (e.g., one mile) from any EBRPD park. Obviously, the cost of data collection is directly proportional to the number of observations collected, and statistically meaningful results can be obtained from a reduced sample if proper selection procedures are followed. A future study might employ only a random sample of all relevant properties sold. Alternately, a sample of parks might be chosen--using only the parks which best represent each recreation activity available, or which are the most important by some other criteria--and a full analysis run on surrounding properties. A further cost reduction could be obtained by combining both approaches to use only a random sample of properties sold around a few key parks.

Final Note on Data Quality. The ultimate purpose is to produce results

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[15]David M. Dorenbusch, Inc. has the principal contract to do the in-depth BART impact study on property values.

which may be used to make inferences about the total population of all residential properties located within the zone of park influence (however large that may be). Cost-saving shortcuts which compromise the validity of the measures collected, or the randomness of the sample employed, will defeat this purpose. It would serve the EBRPD administration better to have generalizable results from a small but high quality case study, rather than the worthless estimates produced from a broader study based on cheap, invalid data.

B. SURVEYS TO ESTABLISH ECONOMIC VALUE TO PARK VISITORS

This short section is a mere sketch of basic considerations surrounding the survey approach, rather than a how-to-do-it manual. Technical details will have to be worked out with the actual investigator when, and if, this phase of the research is ever implemented.

Proper random sampling is as crucial here as in the property value impact phase. The population under scrutiny is composed of all individuals who visit EBRPD facilities. Inferences may be made about the value of the recreation experience to these people, only if the individuals in the sample polled are EBRPD users themselves, and if they reflect the characteristics of the population. The estimates of user behavior found in Phase II of the Tyler study are not generalizable to all users for lack of this type of suitably random sampling procedure.[16]

The basic intent here is to elicit from the respondent the maximum price he would be willing to pay to avoid being deprived the use of an area. This requires a series of questions which are as immediate (i.e., not hypothetical) as possible. Consequently, the random sample of respondents

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[16]Tyler Research Associates(1976), p. v.

should be selected from users as they enter the park. Visitors should be questioned, not about their opinions on higher fees, but rather about how they would react at that moment to different fee amounts. Perhaps the bidding game strategy of Knetsch and Davis(1966) should be used.[17] As with any good survey, rapport must be established at the outset, and sensitive personal questions should be saved until last.

When analyzing the data, individual responses should be used to construct aggregate demand curves. Simple mean and median values should not be relied on. The whole point of this approach is to estimate the consumer surplus under the demand curve which is always overlooked when simple point estimates of the value of a visitor-day are used.

Finally, other questions may be asked at the same time at little marginal cost. Data on transit mode and distance traveled might be collected allowing a separate travel-cost generated demand curve to be constructed as a check on the accuracy of the curve produced above.[18] A last simple question on location of residence would establish what proportion of the people who enjoy the primary benefits of EBRPD parks live outside the district.

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[17]This strategy is discussed in Chapter III of this report.

[18]It is likely, however, that the distances traveled will prove to be too short to provide meaningful cost data.

V. STANDARDS AND EMPIRICAL WORK WHICH PROVIDE AN IMMEDIATE ASSESSMENT OF ECONOMIC BENEFIT

The evaluation methods utilized in this chapter to produce the best possible accounting (at this level of analysis) of the economic benefits generated by EBRPD are not as exciting as the sophisticated, site-specific techniques discussed in the last two chapters, and do not account for every economic benefit. These methods do, however, have the virtue of being easily administered, are intuitively understandable, and do not require the huge data collection efforts of the econometric techniques.

Below, unit-value standards are discussed and employed to obtain a range of economic estimates for primary benefits. A second section discusses the assumptions underlying economic impact multipliers, and uses empirically estimated Bay Area multipliers to value a significant component of secondary benefits. Had it been possible to glean a standardized average impact on property values from the literature, this acknowledged economic impact could also have been added to the above two components, which are finally summed in the third section to arrive at the best estimate at this time of EBRPD benefits to the East Bay.

A. UNIT-VALUE STANDARDS FOR PRIMARY BENEFITS

For doing primary, or user-oriented, benefit calculations, academics generally favor demand analysis techniques (e.g., the travel-cost method) which account for consumer surplus. Practitioners, on the other hand, are generally forced to use quicker, less data-hungry methods; hence, they favor the use of accepted values for a unit of output (e.g., a visitor-day of outdoor recreation).

Some authors recommend standardized unit-values which are not necessarily economic in nature. Foster(1964) speaks of measuring the "productivity" of

recreation land in terms of "patron-hours/acre," and Mack and Myers(1965) make an excellent case for valuing recreation in terms of "merit-weighted user-days." While evaluation schemes of this type may be even more useful than dollar estimates when choosing among alternate uses of scarce resources, they cannot be added to secondary impacts to arrive at the total benefit calculation pursued by this study.

Economic values have long been attributed to a visitor-day by recreation resource administrators on a "seat of the pants" basis. The Federal Water Project Recreation Act of 1965 attempted to create uniform policies for federal agencies engaged in valuing recreation benefits.[19] "Senate Document 97"[20] went further, setting out "principles and standards" for water and land resource planning, including two ranges of standardized dollar values for a visitor-day of recreation. Senate Document 97 has since been superseded by other legislation[21] which has increased the dollar estimates while leaving the original procedures relatively intact. The dollar values currently in use for the Pacific Southwest states are $.75 to $2.25 per visitor-day of "general recreation," and $3.00 to $9.00 per visitor-day of "specialized recreation." These are the most widely accepted standard unit-values at present. EBRPD user benefits may be valued using the "general" scale--"specialized" recreation is reserved for activities such as salmon fishing and big game hunting, or for unique natural resource sites such as those found in Yellowstone.

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[19] Among the agencies affected are: the Army Corps of Engineers, the Bureau of Land Management, the Bureau of Reclamation, Federal Watersheds, the National Recreation Areas, and others.

[20] From the 89th Congress.

[21] See U.S. Senate(1971).

A study by Baxter Associates(1967) embraced the unit-value method as one of the two best approaches--the other was a variant of the travel-cost method--but noted the need for an objective way to choose a specific value within a given range. Both Baxter Associates and Sears(1969) have proposed "weighting schemes," through which different park attributes may be "weighted" according to their value for recreation. Sears's procedure is used below, because this is the system currently in use by some federal agencies in the Bay Area. Using a subjective, but conservative, rating, this author came up with a point score of 53 on Sears's scale which would be associated with a value of $1.50 for a visitor-day in a "typical" East Bay Regional Park.[22] Of course, each park should be rated separately according to Sears's criteria.

Multiplying the best EBRPD-staff park attendance estimate for 1977 of 12 million visitor-days[23] by $1.50 per visitor-day equals $18 million in user benefits for last year. This then would be the figure used by the Army Corps of Engineers in the Bay Area, and will be used as the lowest estimate for this study. Because the federal range is several years old--first set in 1971, these figures do not account for seven years of Bay Area inflation--and because East Bay Parks are of acknowledged high quality, $18 million is certainly a conservative estimate. In fact, for the same reasons, this author recommends using the highest value in the range ($2.25) to produce a best estimate of $27 million in primary benefit which accrues to the East Bay community from EBRPD operation. The most recent value (of approximately $3.00 for a visitor-day) estimated by the Economics Research Associates(1976) study represents a highest estimate of $36 million in economic benefit.

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[22]Sears's criteria and the author's illustrative judgement are given in Appendix B.

[23]The figure, 12 million, is a staff projection from the Tyler data.

This estimate may in fact be rather high, because the $3.00 median value was generated with a survey of households; hence, some respondents' estimates may have reflected the value of two or more visitor-days. Yet this tendency to overestimate is offset some, because the $3.00 estimate does not necessarily reflect the value contained in consumer surplus.[24]

B. ECONOMIC MULTIPLIERS FOR SECONDARY IMPACTS

The multiplied economic impacts discussed in this section do not arise from the "export"of outdoor recreation experiences to paying visitors in the manner that Garrison(1974) and others have used to analyze the use of remote recreation resources as "export bases" for local economies. The "community export base" model does not apply to EBRPD for the reasons given in Chapter II: (1) almost all regional park visits are generated within the district, and (2) the few visitors who arrive from elsewhere in the Bay Area spend relatively little money for day use activities. Rather, in this chapter the dollars spent by the EBRPD administration for salaries, services, and supplies are traced for their beneficial effects on the East Bay community.

The first problem is to determine the magnitude of the multiplier for park operating expenditures. The effort required to construct the large economic models which produce estimates of multipliers is far beyond the scope of this study. In lieu of a unique estimate, several local agencies were contacted to discover what figures are currently in use for other sectors of the East Bay economy. The Port of Oakland(1971) assumes their operating expenditures carry a total multiplied economic impact of three times the original expense--or $2.00 induced economic growth in addition to every $1.00

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[24]And given that "average willingness to pay" was around $5.00, a large consumer surplus no doubt exists.

spent on salaries, services, and supplies. Unfortunately, this rule of thumb has little empirical justification behind it. The number is apparently an average figure from a poll of port practices on the West Coast.

Recent estimates of local multipliers have been determined empirically, however, by the Bart Impact Program (McDonald and Grefe, 1977). A huge, fifty-sector, input-output model of the 1974 Bay Area economy was employed to produce "sales and income multipliers for operating expenditures" of several transit operations which ranged from 3.034 to 3.223. For lack of any better data, this study too will use a multiplier for operating expenditures of 3.0 as the most reasonable estimate.

The second problem is to discover what proportion of the dollars spent by EBRPD can legitimately be expected to recirculate through the economy causing expansion that would not have occured even were the park district not present. "The economic impact on the economy of local areas cannot be measured by total expenditures. But income, employment, sales, and value added...are all units which might be appropriate."(Clawson and Knetsch, 1966, p. 239). In fact, for secondary impacts to be felt, there must be excess capacity in the local economy (e.g., in the form of unemployment). In a fully employed economy, park expenditures would simply cause the distribution of money spent in competing sectors to change, and no net growth would occur. Also, the size of the geographical "zone of impact" is important, because the smaller the area, the lower the proportion of money respent within it; and hence, the lower the multiplied impact on growth within the zone (Arthur D. Little, 1966). Throughout this entire study the zone for analysis is the two-county park district (or "East Bay community") which certainly contains excess capacity. The unemployment rates for several East Bay subpopulations are among the highest in the country. Consequently,

to the extent that EBRPD is hiring workers who would otherwise be unemployed, and to the extent that services and supplies are purchased from local businesses which would otherwise have lower sales volumes, it can be justifiably claimed that EBRPD expenditures have a multiplied expansionary impact on the economy.

The multiplied impact is real, but its accurate measurement remains elusive. The approach pursued below is similar to the one employed to value primary benefits. A series of assumptions are made, of varying degrees of reasonableness, producing a range of estimates.

To be very conservative, only wages paid to formerly unemployed workers are allowed to have a secondary impact. Neither the salaries of all other workers, nor the park purchases of local services and supplies are counted as benefits to the community. Using the percent minority employment for EBRPD (25% are minorities)[25] as an indicator of the proportion of total salary expenditures paid to formerly unemployed workers ($1.868 million), a lowest estimate of secondary economic impact of $5.6 million is established. A more reasonable procedure which adds the unmultiplied direct benefit provided by salaries for non-minority employees to the above estimate of direct and multiplied indirect benefits generated by 25 percent of salary expenditures produces an estimate of $11.2 million. Even though this estimate may still be overly conservative because it ignores all benefits (both direct and indirect) of expenditures for services and supplies, it will still be reported as the best estimate available.

Note that multipliers work just as effectively in reverse (Pierroz, 1978). A $1.00 cut in the wages of an underemployed worker will cause $2.00

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[25]East Bay Regional Park District(1978), "Affirmative Action Quarterly Progress Report."

more to be lost from the worker's community. The EBRPD staff estimates that 50 percent of all employees would become unemployed if a post-Jarvis-Gann budget were implemented. Such a dislocation would cause an $11.2 million contraction in the East Bay economy. Coincidentally, this amount corresponds to the "best estimate" of EBRPD benefit derived above.

A highest estimate for this impact mechanism may be derived using the procedure developed and employed to value the benefit of BART operating expenditures on the local economy (McDonald and Grefe, 1977). The expenditures subject to multiplier effects are those which would not also be spent under the alternative situation being evaluated. In the BART Impact Study, this was the difference between expenditures for BART service and expenditures for an expanded bus service network; thus, 78 percent of all operating expenditures were assumed subject to a multiplier of 3.187. In the EBRPD case the alternate situation is that of closed parks with virtually no operating expenditures. Consequently, all $9.7 million spent on salaries, services, and supplies are assumed to be subject to the rule of thumb multiplier of 3.0, creating a highest estimate of $29.2 million in secondary impact using the BART technique.

C. THE BOTTOM LINE

The primary and secondary benefits discussed in the preceding two sections do not overlap (there is no danger of double counting); hence, they may be added together to get a best estimate (at this stage) of the economic benefits of EBRPD to the East Bay community equal to $38.2 million. While there is much uncertainty in such a single estimate, the EBRPD administration may be confident that the actual benefit of these two mechanisms lies between $23.6 million and $65.2 million. The significant point is that

under the most conservative assumptions, benefits of $23.6 million far exceed the $16.3 million collected last year from property taxes, subventions, user charges, and fees.

In addition, there is a well-documented economic benefit through the increase in values (of perhaps 3 percent to 9 percent on the average) of residential properties within one-half mile or so from all regional parks. Furthermore, this benefit can be measured with more in-depth study (see Chapter IV). There is also the economic, but unmeasureable, benefit EBRPD provides in increasing the East Bay's competitive ability to attract new industry. Other intangibles, not the least of which is the educational value of the parks, provide significant non-economic benefits which should never be overlooked (see Appendix A).

APPENDIX A

Rationale For The Public Provision Of Parks

When a private good (e.g., shoes) is purchased in a competitive market, the buyer is purchasing the benefits derived from that good with his money. Furthermore, he enjoys virtually all the benefits of his purchase himself (only he wears the shoes). This study has shown that this is not the case with parks. There are benefits which are "external" to those purchased by the park visitor with his day-use and parking fees. For example, increased residential property values (derived from increased residential amenities) is an external benefit which is not accounted for by park charges and fees.

Regional parks also have the attributes of what economists call "public goods." In average ranges of use, park consumption is "nonrival." This means many visitors can enjoy the same park at once without significantly affecting the quality of the experience (until the park becomes overcrowded). Also, huge numbers of consumers cannot be excluded from enjoying some of the benefits of regional parks; hence, no market can exist which would charge these consumers for the benefits they are receiving. For example, thousands of Bay Area residents may enjoy views of EBRPD parklands, but no mechanism exists for collecting a fee for such "use" of the parks.

Economists also use several other, more technical, arguments to show why private markets are not an efficient means of providing parks. Park services are subject to "decreasing marginal costs" of provision, making pricing unfeasible according to the usual profit-maximizing rules. There are "indivisibilities" and "lumpiness" in supplying service. In other words, regional parks are often an all-or-nothing proposition (to be of value, regional wildernesses must be large, even if there is only a small current demand for them). The point, according to standard economic logic, is that

reliance on private markets for the provision of parks will lead to a socially-undesireable undersupply of park services.

There are additional social benefits of parks which have no place in the economic calculus at all. From the societal perspective (and from the perspective of the East Bay Regional Park District), parks have "merit" beyond their economic value. EBRPD facilities are used extensively by local schools to teach East Bay children. All society benefits from the good health of its populace, which is enhanced by frequent participation in outdoor sports. Society values the conservation of natural beauty and of wildlife. Yet dollar amounts cannot readily be attached to these social values.

In the increasingly complex world of today, the public is clamoring more and more for accountability in their public officials. To make decisions which bear up under close scrutiny, public administrators have therefore been forced to use increasingly objective criteria. An unfortunate consequence of increasing objectivity in decisionmaking is that economic studies, with hard dollar figures, are being relied upon to the exclusion of social considerations which do not fit into the economic calculus. A study, such as this one, which attempts to value all economic benefits of a public park district can never be assumed to measure all benefits. The reason parks tend to be publicly provided in the first place is because all benefits are not economic.

APPENDIX B

Subjective Rating of EBRPD Facilities
for Determination of the Federal Standard
for the Value of a Visitor-Day

(Criteria and Judgement Factors are reproduced on the following two pages*)

CRITERIA	RATING
(a) Available alternate areas	5
(b) Access	18
(c) Facilities	10
(d) Activities	10
(e) Environmental quality	10
TOTAL	53

53 points corresponds to a value of $1.50 per visitor-day.

*Source: Sears, James D. 1969. "Methodology for Determining General Recreation Values Under Senate Document 97." Report to the Pacific Southwest Inter-Agency Committee, July 24, 1969.

CHART II

GUIDELINES FOR EVALUATING ALL GENERAL RECREATION

(Assuming Ultimate Development)

CRITERIA	JUDGEMENT FACTORS				
a) Available alternate areas Point Value: Total Points: 18	Several within 1 hr. travel time; a few within 15 min. travel time 0-3	Several within 1 hr. travel time; none within 15 min. travel time 4-6	One or two within 1 hr. travel time; none within 30 min. travel time 7-10	None within 1 hr. travel time 11-14	None within 2 hrs. travel time 15-18
b) Access Point Value: Total Points: 18	Limited access by any means to project and within project (4 wheel drive) 0-3	Fair access, poor quality roads (auto only) to project; limited access (4 wheel drive) within project 4-6	Fair access, fair roads to project; fair access, poor quality roads within project (auto only, no trailer) 7-10	Good access, good roads to project (car with trailer); fair access, good roads within project 11-14	Good access, high standard road to project; good access, good roads within project 15-18
c) Facilities 1/ Point Value: Total Points: 14	No facility development 0-2	Minor facility development 3-5	1 or more areas of adequate quality facilities 6-8	1 or more areas of high quality facilities 9-11	High quality facilities in all areas 12-14
d) Activities 2/ Point Value: Total Points: 30	Several general activities 3/ 0-4	Several general activities of high quality 5-10	Several general activities; one high value activity 4/ possible 11-16	Several general activities; 1 or more high value activities of high quality 17-23	Several general activities; 1 or more high value activities of very high quality 24-30
e) Environmental quality Point Value: Total Points: 20	Low aesthetic quality 5/ factors exist that significantly lower quality 6/ 0-2	Average aesthetic quality; factors exist that lower quality to minor degree 3-6	Above average aesthetic quality; any limiting factors can be rectified reasonably 7-10	High aesthetic quality; no factors exist that lower quality 11-15	Outstanding aesthetic quality; no factors exist that lower quality 16-20

PART II (Continued)

GUIDELINES FOR EVALUATING ALL GENERAL RECREATION

Point Value	0	10	20	30	40	50	60	70	80	90	100
Recreation Benefits	~~.50~~	~~.60~~	~~.70~~	~~.80~~	~~.90~~	~~1.00~~	~~1.10~~	~~1.20~~	~~1.30~~	~~1.40~~	~~1.50~~
	.75	.90	1.05	1.20	1.35	1.50	1.65	1.80	1.95	2.10	2.25

1/ Value should be adjusted for overuse.

2/ Value for water activities should be adjusted if significant seasonal water level changes occur.

3/ General activities include those which are common to the region and which are usually of normal quality. This includes picnicking, camping, hiking, riding, cycling, fishing and hunting which would be of normal quality. Also included are scientific-geological-historical areas of local significance and specialized recreation such as nature photography and wilderness pack trips.

4/ High value activities include those which are not common to the region and/or nation and which are usually of high quality. This includes high quality bathing and boating and aesthetic-scientific-historical-geological areas of national significance.

5/ Major aesthetic qualities to be considered include geology and topography, water, and vegetation.

6/ Factors to be considered in lowering quality include air and water pollution (including odors and noises), pests, poor climate and unsightly adjacent areas.

REFERENCES

Arthur D. Little, Inc. 1966. Tourism and Recreation: A State of the Art Study. Washington, D.C.: U.S. Dept. of Commerce.

Baxter, Alfred, and Associates. 1967. "Alternative Approaches to the Measurement of Recreation Benefits Associated with Multi-Purpose Water Projects." Preliminary report to the Assembly Committee on Water, California State Legislature, January, 1967.

Burt, Oscar R. and Durward Brewer. 1971. "Estimation of Net Social Benefits from Outdoor Recreation." Econometrica, 39 (September): 813-26.

Cicchetti, C.J., A.C. Fisher and V.K. Smith. 1973. "Economic Models and Planning Outdoor Recreation." Operations Research, 21 (September/October): 1104-1113.

Clawson, Marion. 1959. "Methods of Measuring the Demand for and the Value of Outdoor Recreation." Washington, D.C.: Resources For the Future, Inc., Reprint #10.

Clawson, Marion. 1972. America's Land and Its Uses. Baltimore: Johns Hopkins Press.

Clawson, Marion and Jack L. Knetsch. 1966. Economics of Outdoor Recreation. Baltimore: Johns Hopkins Press.

Darling, Arthur H. 1973. "Measuring the Benefits of Urban Water Parks." Land Economics, 49 (February): 22-34.

Devanney, J.W. III, G. Ashe and B. Parkhurst. 1976. Parable Beach: A Primer in Coastal Zone Economics. Cambridge, Mass.: M.I.T. Press.

Dorenbusch, David M. and Co., Inc. 1974. A Generic Methodology to Forecast Benefits from Urban Water Resource Improvement Projects. Report for the Office of Water Research and Technology, Dept. of Interior.

Dorenbusch, David M. and Co., Inc. 1975. The Impact of Water Quality Improvements on Residential Property Prices. Final Report for the National Commission on Water Quality.

East Bay Regional Park District. 1973. Master Plan.

East Bay Regional Park District. 1977. 1977/78 Budget.

East Bay Regional Park District. 1978. Affirmative Action Quarterly Progress Report, first quarter.

Economics Research Associates. 1976. Evaluation of Public Willingness to Pay User Charges for Use of Outdoor Recreation Areas and Facilities. Prepared for the Bureau of Outdoor Recreation.

Foster, John H. 1964. "Measuring the Productivity of Land Used for Outdoor Recreation." Land Economics, 40 (May): 224-227.

Garrison, Charles B. 1974. "A Case Study of the Local Economic Impact of Reservoir Recreation." Journal of Leisure Research, 6: 7-19.

Gibbs, Kenneth C. 1974. "Evaluation of Outdoor Recreational Resources: A Note." Land Economics, 50: 309-311.

Gold, Seymour. 1973. Urban Recreation Planning. Philadelphia: Lea and Febiger.

Hammer, Thomas R., Robert E. Coughlin and Edward T. Horn IV. 1974. "The Effect of a Large Urban Park on Real Estate Value." Journal of the American Institute of Planners, 40 (July): 274-277.

Kitchen, James W. and William S. Hendon. 1967. "Land Values Adjacent to an Urban Neighborhood Park." Land Economics, 43 (August): 357-360.

Knetsch, J.L. and Robert K. Davis. 1966. "Comparisons of Methods for Recreation Evaluation." In Water Research, A.V. Kneese and S.C. Smith editors. Baltimore: Johns Hopkins Press, 1966.

Light, Stephen S. and David L. Graves. 1978. "Policy Issues in Recreation and Leisure: An Overview." Policy Studies Journal, Spring.

Lyon, David W. 1972. The Spatial Distribution and Impact of Public Facility Expenditures. Ph.D. dissertation, U.C., Berkeley, Department of City and Regional Planning.

Mack, Ruth P. and Sumner Myers. 1965. "Outdoor Recreation." In Measuring Benefits of Government Investments, Robert Dorfman, editor. Washington, D.C.: The Brookings Institution.

Mansfield, N.W. 1972. "The Estimation of Benefits from Recreation Sites and the Provision of a New Recreation Facility." In Benefit Cost Analysis: 1971, an Aldine Annual. Chicago: Aldine-Atherton, Inc., 1972.

McConnell, Kenneth E. 1977. "Congestion and Willingness to Pay: A Study of Beach Use." Land Economics, 53 (May): 185-195.

McDonald and Grefe, Inc. 1976. "Theoretical Framework for the Evaluation of Economic and Financial Impacts of BART." Working paper for the BART Impact Program, July.

McDonald and Grefe, Inc. 1977. "The Economic Impacts of BART Capital and Operating Expenditures." A Technical Memorandum, prepared for the Metropolitan Transportation Commission, June.

McMillan, Melville. 1975. "Measuring Benefits Generated by Urban Water Parks." Land Economics, 51 (November): 379-381.

Merewitz, Leonard. 1968. "Estimation of Recreational Benefits at Selected Water Development Sites in California." The Annals of Regional Science, II, No. 2 (December).

Moore, Arthur L. 1962. "Reservoir Recreation and Local Economic Growth." ORRRC Study Report, No. 24.

Musgrave, Richard and Peggy Musgrave. 1976. Public Finance in Theory and Practice, 2nd. ed. New York: McGraw-Hill Book Co.

ORRRC (Outdoor Recreation Resources Review Commission). 1962. Economic Studies of Outdoor Recreation. Study Report, No. 24.

Pierroz, Elaine N. 1978. Economic Practices Manual. Office of Planning and Research, State of California.

Port of Oakland. 1971. The Port of Oakland: The Giant Economy Model. Staff report from the Port's Department of Research.

Port of Oakland. 1978. Oakland International Airport: Master Plan Summary, January.

Robinson, Warren C. 1967. "The Simple Economics of Public Outdoor Recreation." Land Economics, 43 (February): 71-83.

Sears, James D. 1969. "Methodology for Determining General Recreation Values Under Senate Document 97." Report to the Pacific Southwest Inter-Agency Committee.

Skaburskis, Andrejs. 1976. "The Impacts of BART on Property Values: A Case Study of the Rockridge Neighborhood." Working Paper for the BART Impact Program.

Tyler Research Associates. 1976. The East Bay Regional Park District: Need and Demand Survey.

U.S. Senate. 1971. "Procedures for Evaluation of Water and Related Land Resource Projects." 92nd Congress, 1st Session. Findings and recommendations of the Special Task Force of the U.S. Water Resources Council, Committee on Public Works.

Weicker, John C. and Robert H. Zerbst. 1973. "The Externalities of Neighborhood Parks: An Empirical Investigation." Land Economics, 49 (February): 99-105.

Wennergren, E. Boyd. 1964. "Valuing Non-Market Priced Recreational Resources." Land Economics, 40 (August): 303-314.

Wennergren, E. Boyd. 1967. "Surrogate Pricing of Outdoor Recreation." Land Economics, 43 (February): 112-116.

Wennergren, E. Boyd and Herbert H. Fullerton. 1972. "Estimating Quality and Location Values of Recreational Resources." Journal of Leisure Research, 4 (Summer): 170-183.